

## CLAIMS

1. a conferencing system comprising:

(a) a plurality of participants;

(a) a like plurality of facilitator agents, each of said facilitator agents associated with a corresponding one of said plurality of participants, each said plurality of facilitator agents including.

(1) means for monitoring communication of a participant in the conferencing system;

(2) means for comparing the communication of the participant to a predetermined set of communication passages; and

(3) means for providing a prompt to a participant in the conferencing system in response to the means for comparing finding a match between the communication of a participant and one of the predetermined set of communication passages; and

(b) a like plurality of social agents each of said social agents associated with a corresponding one of said plurality of participants, each of said social agents including.

(1) means for monitoring relevant components of a design environment and suggesting appropriate actions to be taken by a participant; and

(c) means for learning how to effectively represent each individual of a plurality of individuals in the design environment.

2. The conferencing system of Claim 1 wherein said means for comparing the communication of the participant to a predetermined set of communication passages includes means for learning communication passages by being presented with one or more situation-action pairs which are classified in a rule-base such that said facilitator agent can proactively respond to future situations without user intervention.

3. The conferencing system of Claim 1 wherein said means for monitoring relevant components of a design environment and suggesting appropriate actions to be taken by a

3 participant includes means for monitoring and suggesting by being presented with one or  
 4 more situation-action pairs which are classified in a rule-base such that said social agent can  
 5 proactively respond to future situations without user intervention.

1 4. The conferencing system of Claim 1 wherein said social agents express an emotion  
 2 of a participant.

1 5. The conferencing system of Claim 1 wherein said facilitator agents suggests a change  
 2 of forum in response to a particular agenda item.

1 6. A facilitator agent for use in a conferencing system, the facilitator agent  
 2 comprising:  
 3 (a) means for monitoring communication of a participant in the conferencing system;  
 4 (b) means for comparing the communication of the participant to a predetermined set of  
 5 communication passages; and  
 6 (c) means for providing a prompt to a participant in the conferencing system in  
 7 response to the means for comparing finding a match between the communication of  
 8 a participant and one of the predetermined set of communication passages..

1 7. The facilitator agent of Claim 6 further comprising means for evolving a reaction  
 2 with the use of the conferencing system.

1 8. The facilitator agent of Claim 6 further comprising:  
 2 means for coupling to a control mechanism; and  
 3 means for establishing an appropriate control mechanism for a given forum setting..

1 9. The facilitator agent of Claim 6 further comprising means for building a rapport  
 2 with a conferring participant through an interface technique that builds trust between the  
 3 participant and the agent.

1 10. The facilitator agent of Claim 6 further comprising:  
2 means for presenting a choice to a participant; and  
3 means for accepting a decision from the participant.

1 11. The facilitator agent of Claim 6 further comprising means for presenting a  
2 caricature representation that informs the user of its current process state.

1 12. The facilitator agent of Claim 11 wherein the process state corresponds to one of  
2 thinking, suggesting, gratified, disappointed, or confused.

1 13. The facilitator agent of Claim 11 further comprising emotion representing means for  
2 providing a suggestion in response to a decision and for showing expressions of sadness or  
3 happiness dependent upon the reaction of the participant.

1 14. The facilitator agent of Claim 11 further comprising means for building thresholds  
2 for decisions that may be taken without user intervention.

1 15. The facilitator agent of Claim 11 further comprising means for encoding user  
2 preferences for agent autonomy such that said agent includes an indication of what  
3 decisions the participant with which the agent is associated is willing to delegate to the  
4 agent.

1 16. The facilitator agent of Claim 11 wherein the agent's decisions on process  
2 interventions are based on the following aspects of the agent environment:

- 3 (a) a current topic's recommendation list;  
4 (b) threshold levels indicating user preferences;  
5 (c) an averaged record of the participation of each participant in a negotiation process; and  
6 (d) a complete conversation model of an ongoing negotiation.

1 17. The facilitator agent of Claim 11 further comprising:

means for generating a vector representing the averages of the on-line time consumed by each participant in a forum;

means for generating a vector representing the amount of recommendations generated regarding a specific intent;

means for generating a vector representing the average time a participant in a forum waits before given the right to speak; and

means for generating a vector representing the relevance of a topic to each participant in a forum.

18. The facilitator agent of Claim 17 wherein a weight is assigned to each of the vectors and the elements are summed..

19. The facilitator agent of Claim 18 wherein the weights are adjustable by a user.

20. The facilitator agent of Claim 6 wherein the facilitator agent distinguishes between: (1) brainstorming/free control strategy, (2) a lecture control strategy; and (3) a chairperson control strategy..

21. A social agent for use in a conferencing system, the social agent comprising:  
means for monitoring relevant components of a design environment and suggesting appropriate actions to be taken by a participant; and  
means for learning how to effectively represent each individual of a plurality of individuals in the design environment.

22. The social agent of Claim 21 further comprising:  
means for becoming more familiar with a participant with which the agent is associated;  
means for cooperating with the agents of other participants in the conferencing system to decide upon an appropriate meeting control scheme; and  
means for reaching a consensus on a meeting process intervention.

1 23. A distributed meeting system comprising the steps of:  
2 providing communication connectivity among distributed clients in a conference;  
3 sharing information among clients participating in a meeting;  
4 translating data in order to provide a coherent view of the data among a plurality of  
5 clients; and  
6 controlling work flow and communication process across a network.

1 24. The distributed meeting system as recited in claim 23 wherein the providing  
2 communication connectivity among distributed clients in a conference step comprises the  
3 steps of:  
4 provide naming services to identify client locations; and  
5 interacting with any network protocols to transmit data across the network between  
6 the clients.

1 25. The distributed meeting system as recited in claim 23 wherein the sharing  
2 information among clients participating in a meeting step comprises the step of translating  
3 portions of data in order to provide a coherent view of the data among the clients.

1 26. The distributed meeting system as recited in claim 23 further comprising the step of  
2 capturing and storing conversation elements exchanged during a meeting to provide a  
3 technique for retaining group memory.

1 27. The distributed meeting system as recited in claim 23 wherein the controlling work  
2 flow and communication process across a network step comprises the step of providing a  
3 series of delay compensation techniques to synchronize inter-packet arrival time of  
4 conference support tools.

28. The distributed meeting system as recited in claim 27 wherein the compensation  
techniques includes a real time scheduling support by the conference support tools.

1 29. The distributed meeting system as recited in claim 28 wherein the compensation  
2 techniques includes providing a queuing mechanism to enforce any real time constraints.

1 30. A distributed conferencing system comprising the steps of:  
2 defining meeting agenda items and assigning a floor control strategy to each agenda  
3 item, the floor control strategy determined by a meeting initiator;  
4 automatically sending notification messages to the participants;  
5 creating a forum server process with the appropriate membership and agenda;  
6 maintaining meeting membership and temporal control of the meeting;  
7 providing meeting notification, agenda traversal, and maintaining and traversing  
8 meeting logs; and  
9 processing messages from each client participating in the meeting; and  
10 providing an agent for each participant, the agent providing queues to the participant in  
11 response to messages.

1 31. The distributed conferencing system as recited in claim 30 wherein the creating a forum  
2 server process step comprises the step of providing tokens to manipulate a speaker queue .

1 32. The distributed conferencing system as recited in claim 30 wherein the creating a forum  
2 server process step comprises the step of ordering of a speaker queue based on a selected  
3 control strategy.

1 33. The distributed conferencing system as recited in claim 32 wherein the control strategy  
2 comprises a chairperson strategy, a brainstorming strategy, a lecture strategy and a dynamic  
3 interaction strategy.

1 34. The distributed conferencing system as recited in claim 30 further comprising the step  
2 documenting the meeting to provide a convenient snapshot of any proceedings for late  
3 participants and for follow-up meetings to retain group memory by saving rationale knowledge

4 encoded in any speech exchange during the meeting.

1 35. The distributed conferencing system as recited in claim 34 wherein the documenting the  
2 meeting step comprises the steps of indexing the conversation and providing conversation  
3 browsing tools.

1 36. The distributed conferencing system as recited in claim 34 wherein the documenting the  
2 meeting step comprises the steps of indexing any free-form conversation occurring in a typical  
3 meeting event; and incorporating a semi-structured design including intent, recommendations  
4 and justifications.

1 37. The distributed conferencing system as recited in claim 30 further comprising the steps  
2 of providing a graph that forms a user interface and allows quick visualization of the meeting  
3 proceedings; and browsing conversation data based on a single graph and, alternatively, on the  
4 intersection of several graphs.

1 38. A conferencing system having a plurality of interlinked modules and servers  
2 comprising:

3 a collaboration manager comprising a plurality of media drivers including a video  
4 camera, a microphone and a display; and a message server to package data for transmission  
5 over the network and enforce synchronization constraints during media play-back;

6 at least one forum server to control a conference among several clients and enforces  
7 membership constraints; the forum server additionally logging all conference proceedings;

8 at least one forum manager to provide a specific control methodology and for  
9 converting the control strategy; and

10 a name server to maintain a directory of any clients, forum managers and forum servers  
11 within the conferencing system.

1 39. The conferencing system as recited in claim 38 wherein the collaboration manager  
2 provides a client interface and maintains lists of available media resources and forum servers

3 available to the client.

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1 ~~39~~ <sup>40</sup>. The conferencing system as recited in claim 38 wherein the collaboration manager  
2 comprises a snapshot facility that allows each client to retain portions of the meeting as  
3 personal notes.

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1 ~~40~~ <sup>41</sup>. The conferencing system as recited in claim 38 wherein the collaboration manager  
2 comprises conference controls associated with the forums in which the client is participating.

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1 ~~41~~ <sup>42</sup>. The conferencing system as recited in claim 38 wherein the collaboration manager  
2 provides a multimedia server with synchronization information, frame size, and delay and  
3 error tolerances.

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1 ~~42~~ <sup>43</sup>. The conferencing system as recited in claim 38 further comprising a media  
2 synchronization receiver to reassemble a frame and ensure that play-back of the frame is  
3 synchronized such that the frame reflects an initial input from a source.

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1 ~~43~~ <sup>44</sup>. The conferencing system as recited in claim 42 wherein the media synchronization  
2 receiver comprises a set of parameters, each parameter base on the synchronization technique  
3 supplied by a corresponding media driver.

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1 ~~44~~ <sup>45</sup>. The conferencing system as recited in claim 43 wherein each media driver also supplies  
2 temporal relations with respect to the other media drivers in the receiver.

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1 ~~45~~ <sup>46</sup>. The conferencing system as recited in claim 42 wherein multimedia frames transmitted  
2 by a source participant are encoded with a frame sequence number and a time stamp; and  
3 initial and final frames in a conversation are uniquely tagged to aid the synchronization  
4 and scheduling mechanism.

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1 ~~46~~ <sup>47</sup>. The conferencing system as recited in claim 45 wherein the receiver comprises a



2 scheduler to poll each queue and retrieve a list of complete frames.

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1 47. The conferencing system as recited in claim 38 wherein the least one forum server  
2 comprises a subscription control process and a speaker control process.

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1 48. The conferencing system as recited in claim 47 wherein the subscription control  
2 process comprises a predefined list of allowable conference participants; and  
3 a forum maintainer with the right to revoke and grant membership to potential  
4 members.

R1.126 50.  
1 49. A distributed conferencing system comprising:  
2 a forum server to provide a communication control mechanism to allocate  
3 communication channels among clients and to maintain meeting membership, meeting control  
4 strategies, meeting agenda and meeting notification;  
5 a name server to maintain a list of participants and a list of forums; and  
6 a plurality of clients to provide a user interface to corresponding participants.

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1 50. The distributed conferencing system as recited in Claim 30 wherein each meeting  
2 participant is also assigned particular access rights including agenda editing, chairperson  
3 control, and control of the meeting proceedings.

R1.126 52.  
1 51. The distributed conferencing system as recited in Claim 31 wherein the meeting  
2 proceeding